S. Olmsted, of the Army Air Service, necessary funds for the purchase of equipment and the maintenance of this laboratory were furnished to the Bureau of Mines late last spring. This equipment is now being received and installed by the Bureau of Mines in the New Department of the Interior Building at Washington. The equipment consists of two four-stage Norwalk compressors with a capacity of 75 cu. ft. of free air per minute each. These will be used for making liquid air and for other purposes in connection with the experimental work. There will also be one vertical submarine type Norwalk compressor with a capacity of 12 cu. ft. of free air per minute to be used in connection with a liquid hydrogen cycle, and a similar compressor with a capacity of 8 cu. ft. of free air per minute for use in connection with a liquid helium cycle. These compressors will all be driven by variable speed motors, and be equipped with unloading valves so that the capacities can be varied within wide limits. In addition, there will be an adequate equipment of gas holders, a machine shop, and a chemical and physical laboratory. The force will consist of four technical men and two mechanics, and the whole laboratory will be under the direction of the writer. It is hoped that the equipment will be completely installed by January 1.

Whereas the main object of the laboratory will be to assist in every possible way the whole helium project, both on the production and refining ends, there is a strong desire that this laboratory shall be of material use to science in general, and that it may be possible later on to make arrangements for its facilities to be used in special cases by men outside the government service who are specially equipped for such work. R. B. Moore

SCIENTIFIC EVENTS

PHOSPHATE IN MOROCCO

In times of peace this country, according to the Geological Survey, has in a single year sent abroad, mostly to Europe, 1,250,000 long tons or more of high-grade phosphate rock, or more than 40 per cent. of its total annual output. The exports decreased during the war until, in 1918, they amounted to only 143,000 tons, or 6 per cent. of the domestic output. They increased to 379,000 tons in 1919, but these reports of newly discovered large deposits in Morocco, which, like those in Algeria and Tunis, are near to the large fertilizer market in southern Europe, may mean that the American exporter of phosphate rock will have formidable competition in that region.

As superphosphate fertilizer is manufactured chiefly from phosphate rock, France, by her control of the deposits in Algeria, Tunis and Morocco, has a practical monopoly of the North African sources of a commodity that is essential to the restoration of European agriculture. When these deposits have been further developed and adequate transportation facilities have been provided the market for phosphate rock in southern Europe will probably be supplied from northern Africa, so that the American exports to Europe will be confined to the northern countries.

The principal deposits in Morocco are about 80 miles southeast of Casablanca and consist of three beds or series of beds of phosphatic sand in a formation that is 50 to 200 feet thick. The uppermost phosphatic bed contains 67 per cent. of tricalcium phosphate, the middle bed 30 per cent. and the lower beds 53 per cent., and the commercial average for the group is about 59 per cent. Water and hydroelectric power for the exploiting of the deposits can be obtained from a river near by. In order to market the rock, however, a railroad would have to be built from the deposits to Casablanca, the nearest port.

Another deposit, which consists of soft phosphatic material carrying 72 to 75 per cent. of tricalcium phosphate, lies 40 miles northeast of the principal one. Still another deposit lies a short distance southeast of Rabat, a coast town. This deposit consists of sandy clay 16 feet thick containing nearly 47 per cent. of tricalcium phosphate.

THE PASTEUR INSTITUTE OF PARIS

The Paris correspondent of the *Journal* of the American Medical Association writes:

A touching appeal for the cause of microbiologic research was recently made by Dr. Charles Nicolle, director of the Pasteur Institute of Tunis, in a letter published in the *Temps*. He had just completed a stay of two months in France, and he returned appalled at the conditions which he found. The country which has produced Pasteur, Duclaux, Laveran and Roux, to mention only a few of the more illustrious scientists, and which received Metchnikoff with open arms, without the least compunction is permitting the decline of a science that has given France a large part of her past glory and from which she has always derived the first benefits.

Nicolle admits that it would be unfair to demand that the state support the laboratories, especially at the present time. However, he thinks that it is not the teaching laboratories from which we should expect to see great discoveries come forth: he who teaches is an erudite, while the mentality of the research worker is entirely different, and it is through other than teaching institutions that all real progress in microbiology must come. The typical institution of this kind in France and the one most widely known is the Pasteur Institute of Paris, the parent establishment whose offspring may be found in France, the colonies and abroad. The Pasteur Institute is a private establishment and does not serve as a teaching medium. The members of its staff devote all their efforts to scientific investigations, and in the thirty-five years of their endeavors they have shown marked ability. The institute derives its income from the sale of biologic products and from donations, and to-day neither of these sources furnishes ample means. Not having the inexhaustible resources of the government back of it, it is now merely vegetating, and it is only by a miracle that more can be accomplished.

Nicolle, therefore, addresses to the public an appeal for support of the microbiologic laboratories, pointing out that the matter should be of special interest to the farmers, for instance, for it makes possible a continuation of the researches on aphthous fever, a disease that has been responsible for the loss of millions and constitutes a permanent menace to agriculture. On the other hand, Nicolle calls attention to the difficulty of inducing young men to enter the laboratories, for the small budgets make a career in a laboratory anything but profitable.

THE BRITISH MINISTRY OF AGRICULTURE

Nature states that changes are announced at the British Ministry of Agriculture, the effect of which is the promotion of Mr. F. C. L. Floud to be permanent secretary and the liberation of Sir Daniel Hall from office work so that he will be able to keep in close personal touch with agricultural developments and devote his whole time to the organization of agricultural education and research. The scheme now in operation comprises four essential parts: (1) Research institutions, where knowledge is gained and agricultural science systematically developed and put into such form that teachers and experts can use it. At first this work was distributed among a number of university departments, but of recent years there has been a tendency to concentrate it at a few institutions owing to the necessity for bringing individual workers into closer personal contact with each other and with the large-scale problems of the farmer. (2) Agricultural colleges, where experts and large farmers will be trained, receiving a three years' course of instruction of university character. Most of these colleges are associated with universities which award degrees in agriculture; for students who do not wish to take degrees there is a diploma course requiring a high standard of technical work. (3) Farm institutes for small farmers and farm-workers who can not spare three years for college, but have some practical knowledge and are unable or unwilling to go through the ordinary college course. These institutes aim at giving sound courses of instruction on soil, manure, crops, animal husbandry, etc., but it is usually presumed that the student will take up farming in the area served by the institution, and for which the instruction is specially appropriate. (4) Advisory officers. In each county arrangements are made whereby farmers, smallholders, and others may consult the agricultural expert appointed by the county authority in regard to any difficulties they may meet with in their work. The expert is in a position somewhat similar to that of the general medical practitioner, and usually finds that he can deal with a large number of the cases presented to him. He is, however, in touch with the colleges, research institutions, etc.,